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AG-6564 (7244*87)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

KLAUS-PETER CRONE ET AL	
SERIAL NO.: 09/744,722	**ART UNIT: 2812**
FILED: MAY 7, 2001	**EXAMINER: S. MULPURI**
FOR: METHOD OF PRODUCING SOLAR CELLS	

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE

Sir:

The present application has been carefully studied in view of the outstanding Office Action dated July 2, 2003, and reconsideration of that Action is requested in view of the following comments.

Applicant respectfully submits that claims 1-9 herein define patentable subject matter, and the details of these claims are not suggested by the prior art combinations relied upon by the Examiner in the Office Action. In the rejection of the claims, the Examiner relies on the combination of Mitlitsky et al US 5,714,404 ("Mitlitsky") and Takenouchi et al US 5,427,961 ("Takenouchi") in rejecting claims 1-6 and the combination of Tadatake JP 05090624 and Mitlitsky in rejecting claims 4-9. For the

reasons expressed below, these prior art combinations fall short of suggesting the subject matter recited in claims 1-9.

Takenouchi teaches at column 1, lines 19-36, that PET film can be used to fabricate solar cells by deposition of amorphous silicon, and in the following line that care must be taken with respect to the substrate temperature. At column 2, lines 44-55 an optimum deposition temperature of 100 to 300°C is disclosed, but at a temperature higher than 100°C PET is taught to be a problem. Therefore, it would have been obvious from Takenouchi to use PET as a substrate when only the deposition (coating) of the photovoltaically active layer is taken into regard, because this process step is done according to the present invention only below the glass transition temperature of the polymeric support material.

But the teaching of Takenouchi would have withheld a person skilled in the art from using PET at the high temperatures that are necessary for the annealing step. According to the present invention the annealing temperature is at least 250°C, in particular 400 to 600°C for 0.01 to 1 s, which would have been taught according to the teaching of Takenouchi to be prohibitive for PET. Therefore, a person skilled in the art could have taken PET as a support, but would have taken the high temperature polymers like PES as known from Mitlitsky. It was only by the present invention that one was able to find a process that allows the use of low temperature substrates for the high temperature annealing process. It would be hindsight to interpret Takenouchi as if this had been known at the time the present invention was made.

Again, although Takenouchi lists PET together with PES and other materials (column 3, lines 49-55) and even though PET is used by Takenouchi (column 4, lines

42-46), this is not evidence that PET and PES are known to be functional equivalents. To the contrary, PET is taught to be "most liable to form oligomers". Therefore, a person skilled in the art would not have chosen the most unstable polymer as disclosed by Takenouchi, when searching for a support to withstand at least 250°C, in particular 400 to 600°C.

From Takenouchi's example at column 5, lines 54-59 it is only demonstrated to deposit on PET at 100°C and the temperature "may range from room temperature to 180°C", which is far from the annealing step of the present invention.

It is only known from the present invention, that "low temperature substrates" can be used for the high-temperature annealing process and a person skilled in the art would not have considered Takenouchi because of this crucial step of the present invention.

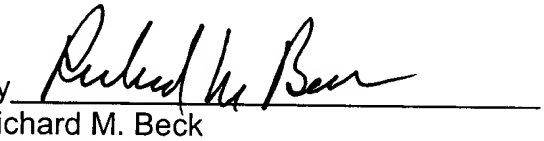
With respect to the Tadatake/Mitlitsky combination, Tadatake simply describes the application of a semiconductor ink on a PET-film. The reference fails to disclose that the support comprises a transparent substrate layer that is electrically conductive, and also fails to disclose that the photovoltaically layer is annealed. Although it was known from Mitlitsky to anneal photovoltaic layers, an artisan would not have applied the teaching of Mitlitsky to the material of Tadatake or vice versa because PET is not included in the "low-temperature substrates" defined and identified by Mitlitsky at column 3, lines 14-19. As previously argued to the Examiner, the "low-temperature" supports of Mitlitsky are commonly known as high-temperature substrates and do not include PET.

Therefore it was neither known nor rendered obvious at the time of the present invention was made, to anneal a photovoltaic layer on a support with a low glass transition temperature and without damage of the support. This holds all the more for a photovoltaic layer on a support comprising a transparent electrically conductive substrate layer. Accordingly, it is respectfully requested that the rejection of claims 4-6 over the combination of Tadatake and Mitlitsky be withdrawn. Claims 8 and 9 are related to claim 1, which is neither known nor obvious from Mitlitsky and Tadatake, and therefore the rejection also should be withdrawn.

Accordingly, for the reasons expressed above it is believed that the present application is in condition for allowance and early notice to that effect is respectfully requested.

Respectfully submitted,

CONNOLLY BOVE LODGE AND HUTZ LLP

By 

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